

REMARKS

Claim 1 is independent and stands rejected under 35 U.S.C. § 103 as being unpatentable over the technical publication authored by Pouillierie et al. ("Pouillierie") in view of JP '183 (English equivalent is US Pub. 2004/0058243; references below regarding JP '183 correspond to the US Pub. paragraphs, hereinafter "Ohzuku") in view of Takahashi '039. This rejection is respectfully traversed for the following reasons.

Claim 1 recites in pertinent part, "wherein said positive electrode comprises a positive electrode active material comprising a particle of a composite oxide represented by a general formula: $\text{Li}_x\text{Me}_{1-y-z}\text{M}_y\text{L}_z\text{O}_2$, where said element Me is Ni and/or Co, said element M is at least one selected from the group consisting of Mg, Ti, and Zn, and said element L is at least one selected from the group consisting of Al, Ca, Ba, Sr, Y and Zr, ... said general formula satisfies $1 \leq x \leq 1.05$, $0.005 \leq y \leq 0.1$ and $0 < z \leq 0.05$." According to one aspect of the present invention, the claimed combination can make it possible to maintain the rated battery capacity while improving the recovery rate. The cited prior art is silent as to the aforementioned dual-effects, much less suggest the compositional requirements to effect such dual-effects.

Turning to the cited prior art, the Examiner relies on Pouillierie as allegedly disclosing $\text{Li}_x\text{Me}_{1-y}\text{M}_y\text{O}_2$ where Me is Ni and M is Mg with a range of $0 \leq y \leq 0.20$. The Examiner admits that Pouillierie does not disclose element L, and relies on Ohzuku as allegedly teaching Al as element L in a range of $0.05 \leq z \leq 0.20$. It is respectfully submitted that the teachings of Pouillierie and Ohzuku do not suggest the *specific* composition of $\text{Li}_x\text{Me}_{1-y-z}\text{M}_y\text{L}_z\text{O}_2$, where the general formula satisfies $1 \leq x \leq 1.05$, $0.005 \leq y \leq 0.1$ and $0 < z \leq 0.05$.

Pouillierie discloses $\text{LiNi}\underline{\text{Mg}}\text{O}_2$ whereas Ohzuku discloses $\text{LiNi}\underline{\text{Mn}}\text{O}_2$. As previously noted during prosecution history, to effect its intended purpose, Ohzuku expressly discloses a

strict requirement for an atomic ratio for elements Me:M of 2:1 (*see* paragraphs 41, 78) in which Mn is an essential element. It is respectfully submitted that the aforementioned distinction between the Mg and Mn contents of Pouillierie and Ohzuku, respectively, affects the teachings related to the L content disclosed by Ohzuku as applied to the composition of Pouillierie. Specifically, because Mn has little effect on a capacity decrease of the active material (*see* page 22, lines 3-5 of Applicants' specification), the amount of Mn included in the composition can be relatively high as taught by Ohzuku. In contrast, Mg content decreases the rated battery capacity (*see* page 41, lines 17-23 of Applicants' specification) so that the relative amount of Mg is low as taught in Pouillierie.

Accordingly, it is respectfully submitted that the amount of Al (element L) used with Mg taught by Pouillierie would be higher than the amount used with Mn taught by Ohzuku. Ohzuku discloses 0.05 atom% as a *minimum when used with Mn*, so as to suggest more than 0.05 atom% for use with Mg. In this regard, Ohzuku teaches that the addition of Al increases the potential of the active material (paragraph 80), and that less than 0.05 atom% of Al will not realize this effect (paragraph 84). It follows that if Mn is replaced with Mg, Ohzuku would suggest adding Al at an amount higher than 0.05% to counter-act the reduced battery capacity provided by Mg. Accordingly, when the teachings of Ohzuku are applied to Pouillierie, the L content would fall outside of the claimed range of $0 < z \leq 0.05$. In direct contrast, the present invention relies on element L for the novel purpose of making it possible to prevent a reaction between the electrolyte and active material, and can therefore set the L content $z \leq 0.05$ to avoid the reduced battery capacity resulting from $0.05 < z$ (*see* page 22, lines 7-9 of Applicants' specification). In this regard, Ohzuku teaches away from the claimed range.

In sum, it is respectfully submitted that the cited prior art does not suggest the specific compositional combination of $\text{Li}_x\text{Me}_{1-y-z}\text{M}_y\text{L}_z\text{O}_2$, where the general formula satisfies $1 \leq x \leq 1.05$, $0.005 \leq y \leq 0.1$ and $0 < z \leq 0.05$. Indeed, the specific combination **and relative amounts** of Mg and Al can provide a synergistic effect according to one aspect of the present invention (*see* page 44, line 1 - page 45, line 8 of Applicants' specification) whereby the claimed combination can make it possible to realize the dual-effects of maintaining the battery capacity while improving the recovery rate. Pouillierie and Ohzuku are silent as to such dual-effects. Pouillierie discloses a broad range for Mg ($0 \leq y \leq 0.2$) where in half the range the Mg amount precludes the aforementioned effects as compared to the narrow claimed range, and Ohzuku discloses adding Al to Mn at 0.05 atom% as a minimum to increase potential but would presumably suggest a greater amount for Mg. Pouillierie and Ohzuku do not recognize the nexus between the Mg/Mn and Al amounts. "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 165 USPQ 494, 496 (CCPA 1970).

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claim 1 is patentable for the reasons set forth above, it is respectfully submitted that all claims dependent thereon are also patentable. In addition, it is respectfully submitted that the dependent claims are patentable based on their own merits by adding novel and non-obvious features to the combination.

Based on the foregoing, it is respectfully submitted that all pending claims are patentable over the cited prior art. Accordingly, it is respectfully requested that the rejection under 35 U.S.C. § 103 be withdrawn.

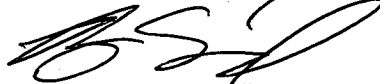
CONCLUSION

Having fully responded to all matters raised in the Office Action, Applicants submit that all claims are in condition for allowance, an indication for which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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